

REMARKS

The title of the invention was found not to be descriptive. Claims 28 to 40 were rejected under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement. Claims 28 to 40 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Claims 28 to 40 were rejected under 35 U.S.C. §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 28 to 40 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, this omission amounting to a gap between the necessary structural connections. Claim 28 and its dependent claims 29 to 40 were rejected under 35 U.S.C. §101 for claiming a use without setting forth any steps involved in the process, thus resulting in an improper definition of a process.

Reconsideration of the application based on the following is respectfully requested.

Title of the invention

The title of the invention was found not to be descriptive and has been amended. Withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. §112, first paragraph

Claims 28 to 40 were rejected under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement. The claims were found to contain subject matter not described in the specification in a way to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time the application was filed.

Claim 28 recites a wave field microscope comprising:
an illumination system for illuminating an object for examination with a plurality of coherent light beams through at least one objective lens arrangement, the object having a

plurality of object structures, the light beams interfering in at least one object plane and illuminating the object in the object plane with an interference pattern;

an optical detection system; and

a holding device for the object,

the interference pattern being a two- or three dimensional point pattern generated by two or three standing wave fields,

the object being shiftable relative to the point pattern, each object structure causing a modulation of the light detected by the optical detection system within a detection point spread function, the modulation being given by the point spread function of the wave field microscope through convolution of the point pattern and the detection point spread function,

for each object structure, a maximum of the point spread function of the wave field microscope being detectable within the detection point spread function using intensity measurements,

a space between two object structures being detectable as a function of values of the maximums of the point spread function of the wave field microscope for the two object structures so as to permit the wave field microscope to measure geometric distances between the object structures.

The Office Action seems to reject the application based on the fact that the claims can be construed to comprise “an infinite number of objective lenses, an infinite number of coherent light beams, and an infinite number of objective lenses, etc.” This is not any reason to reject the claims under the written description requirement. Every open ended “comprising” claim (as opposed to “consisting of” claims) can comprise an infinite number of elements.

What is important for the written description requirement is that the specification makes clear the inventor possessed the claimed subject matter.

That the inventor had possession is clear from the Type I and II wave field microscopes described at page 15, line 34 et seq. and with the capabilities described in the examples. For

example, Example 3 at page 32, line 8 recites a wave field microscope according the present claim 28.

Perhaps the misunderstanding is in the last lines of claim 28:

“for each object structure, a maximum of the point spread function of the wave field microscope being detectable within the detection point spread function using intensity measurements,

a space between two object structures being detectable as a function of values of the maximums of the point spread function of the wave field microscope for the two object structures so as to permit the wave field microscope to measure geometric distances between the object structures.”

This capability of the wave field microscopes of the present invention is described for example at page 33, line 9 to 28: a distance can be measured between the intensity maximum of one structure (fluorescing green) and another structure (fluorescing red).

It is respectfully submitted that one of skill in the art reading the present application would understand that the inventor has possession of claim 28 in view of the Type I and II microscopes described and the examples.

(The Office Action also appears to have confused the written description requirement with the enablement requirement, as it states: “A review of the disclosure fails to find an adequate written description of how any embodiment of the claimed wave field microscope is to be manufactured.” Manufacturing is related to the enablement requirement)

Claims 28 to 40 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. The claims were found to contain subject matter which was not described in the specification so as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It is respectfully submitted that the specification enables one of skill in the art to make the wave field microscopes described in claim 28. The creation of the wave field microscope with two or three dimensional interference patterns is clearly within that of skill in the art, and it is

respectfully submitted that one of skill in the art would understand from the present specification how to provide for permitting “the wave field microscope to measure geometric distances between the object structures” based on the intensity maximums. Determination of such maximums and determining the distance is described in the present application for example with respect to example 3. Designing a wave field microscope of the Type I or Type II described in the specification to provide the capability of determining intensity maximums and determinating of distances between them is well within the skill of one skilled in the art.

Withdrawal of the rejections under 35 U.S.C. §112, first paragraph, is respectfully requested.

Rejections under 35 U.S.C. §112, second paragraph

Claims 28 to 40 were rejected under 35 U.S.C. §112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claims 28 to 40 were rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, this omission amounting to a gap between the necessary structural connections.

However, the claim 28 features of the illumination system, optical system and holding device are related in claim 28 as follows:

an illumination system for illuminating an object for examination with a plurality of coherent light beams through at least one objective lens arrangement, the object having a plurality of object structures, the light beams interfering in at least one object plane and illuminating the object in the object plane with an interference pattern;

an optical detection system; and
a holding device for the object,

the interference pattern being a two- or three dimensional point pattern generated by two or three standing wave fields,

the object being shiftable relative to the point pattern, (relates the holding device holding the object to the illumination system via the interference pattern) each object structure causing a modulation of *the light detected by the optical detection system* (relates the optical detection system to the light of the illumination system) within a detection point spread function, the modulation being given by the point spread function of the wave field microscope through convolution of the point pattern and the detection point spread function,

for each object structure, a maximum of the point spread function of the wave field microscope being detectable within the detection point spread function using intensity measurements,

a space between two object structures being detectable as a function of values of the maximums of the point spread function of the wave field microscope for the two object structures so as to permit the wave field microscope to measure geometric distances between the object structures.

The each of the holding device and the optical detection system are related to the illumination system and thus all are interrelated properly.

As to “intensity measurements”, the maximum intensity which is capable of being measured by the microscope is described for example with respect to example 3 and is clear from the present specification.

Withdrawal of the rejections under 35 U.S.C. §112, second paragraph, to claims 28 to 40 is respectfully requested.

Rejections under 35 U.S.C. §101

Claim 28 and its dependent claims 29 to 40 were rejected under 35 U.S.C. §101 for claiming a use without setting forth any steps involved in the process, thus resulting in an improper definition of a process.

Claim 28 recites the physical capabilities of the microscope, using the terms “being detectable” and does not recite a use.

Withdrawal of the rejections under 35 U.S.C. §101 to claim 28 and its dependent claims 29 to 40 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is now in condition for allowance and applicants respectfully request such action.

Respectfully Submitted,
DAVIDSON, DAVIDSON & KAPPEL, LLC

By: _____
Cary S. Kappel, Reg. No. 36,561
(signing for William C. Gehris, Reg. No. 38,156)

Davidson, Davidson & Kappel, LLC
485 Seventh Avenue, 14th Floor
New York, NY 10018
(212) 736 1940
(212) 736 2427